



**RESIDENTIAL CODE MANUAL
COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
Based on the 2017 LACRC**

**No. 1002
R401.4
Article 1
03-02-17
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**SOILS INVESTIGATION AND EXPANSIVE SOIL REQUIREMENTS FOR GROUP R-3,
R-3.1, AND U OCCUPANCIES**

ISSUE

Section R401.4 of the Residential Code states: "Where quantifiable data created by accepted soil science methodologies indicate expansive, compressible, shifting, or other questionable soil characteristics are likely to be present. The building official shall determine whether to require a soil test to determine the soil's characteristics at a particular location."

The intent of this document is to recognize the County's familiarity with the soil conditions and geotechnical hazards associated with particular areas of the jurisdiction and to provide criteria for exempting the same types of structures as those exempted by the Public Resources Code Sections 2621.6 and 2693.

POLICY

When designed under the Residential Code, a soils investigation for foundation design is not required for the proposed construction of a development of up to 3 one- and two-story buildings classified as Group R-3 and R-3.1 occupancies and/or a building classified as Group U occupancy accessory to Group R-3 or R-3.1 occupancy unless:

- The building is located in, but not limited to, a liquefaction, landslide, collapsible soil, or Alquist-Priolo earthquake fault zone or Sierra Madre fault zone. See RCM R401.4, Article 2 and RCM R401.4, Article 3, or
- It requires a grading permit for the creation of a building pad per BCM J103, Article 1, or
- Footings adjacent to slopes steeper than one-unit vertical in three units horizontal that do not comply with the foundation clearances of Figure R403.1.7.1, or
- It is otherwise required by the building official based upon the characteristics of the specific project.

All projects that do not meet the exemption criteria may be referred to Geotechnical Materials Engineering Division for further evaluation.

Where a geotechnical report is not required, the foundation design shall meet, where applicable, the appropriate Los Angeles County design requirements as described in:

- Design of retaining walls per RCM R404.4, Article 1.
- Use presumptive load-bearing values of clay, sandy clay, silty clay, clayey silt, silt, and sandy silt from Table R401.4.1 of the Residential Code.
- Expansive soils

Foundation systems on expansive soils shall be designed and constructed in a manner that will minimize damage to the building from the movement of the soil. Slab-on-grade and mat-type footings for buildings located on expansive soils shall be designed in accordance with Building Code, Section 1808.6, and as per Residential Code, Section R403.1.8.

When such approved design and methods of construction are not provided, the prescriptive requirements listed below may be used (see attached diagram):

1. All exterior wall foundations and interior bearing wall foundations shall extend not less than 24 inches and 18 inches, respectively, below undisturbed ground surface or finish grade (certified fill).
2. Exterior walls and interior bearing walls shall be supported on continuous foundations.
3. Foundations shall be reinforced with a minimum of four continuous horizontal reinforcing bars. At least two 1/2-inch diameter (No. 4-bar) deformed reinforcing bars shall be placed within 4 inches of the top of the footing and at least two 1/2-inch diameter (No. 4-bar) deformed reinforcing bars shall be placed between 3 inches and 4 inches of the bottom of the footing.
4. Foundations for exterior walls and interior bearing walls shall be tied to the floor slabs by reinforcing bars (dowels) having a diameter of not less than 1/2 inch (No. 4-bar) and spaced at intervals not exceeding 16 inches on center. The reinforcing bars shall extend at least 40 bar diameters into the footings and the slab. Dowels may be omitted when slab is a monolithic pour.
5. Concrete floor slabs-on-grade shall be cast over 2 layers of 2-inch sand fill with a minimum 6-mil moisture barrier membrane sandwiched between the two 2-inch layers. The slab shall be at least 4 inches thick and shall be reinforced with No. 4-bar at 16 inches on center each way.

6. The soil below an interior concrete slab shall be saturated with clean water to a depth of 18 inches prior to pouring the concrete.

Supersedes RCM R401.4 Article 1 dated 02-11-13

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REVIEWED BY: POLICY COMMITTEE

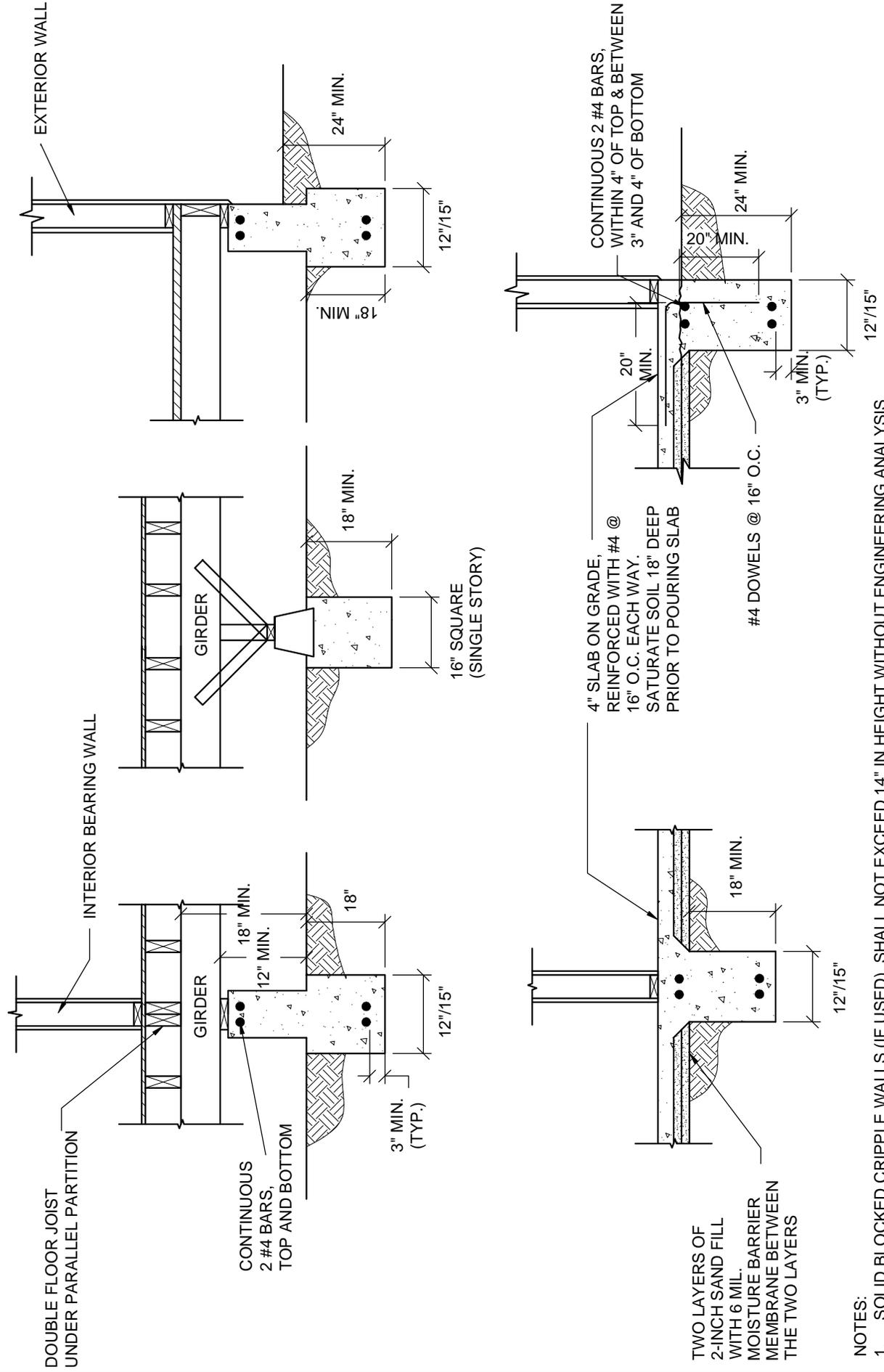
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FOUNDATION SYSTEM ON EXPANSIVE SOIL FOR 1 OR 2 STORY R-3/ ACCESSORY U OCCUPANCIES



- NOTES:
1. SOLID BLOCKED CRIPPLE WALLS (IF USED), SHALL NOT EXCEED 14" IN HEIGHT WITHOUT ENGINEERING ANALYSIS.
 2. PERIMETER WALLS, INTERIOR BEARING WALLS AND POSTS SUPPORTED ON CONTINUOUS FOUNDATIONS.
 3. 12"/15" - MIN. FOOTING FOR SUPPORTING ONE AND TWO FLOORS RESPECTIVELY.
 4. SHEAR TRANSFER DETAILS AND OTHER REQUIREMENTS NOT SHOWN FOR CLARITY.